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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/560,295	03/28/2006	Olivier Andrieu	05162	3320
23338 7590 09/26/2007 DENNISON, SCHULTZ & MACDONALD 1727 KING STREET SUITE 105 ALEXANDRIA, VA 22314			EXAMINER SCHINDLER, DAVID M	
			ART UNIT 2862	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/560,295	<b>Applicant(s)</b> ANDRIEU ET AL.	
	<b>Examiner</b> David M. Schindler	<b>Art Unit</b> 2862	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 September 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 13-19 and 22-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 13-19 and 22-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 December 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

1. This action is in response to the communication filed 9/7/2007. Upon further consideration, the previously indicated claim allowability is withdrawn and the Final Rejection of 3/27/2007 is withdrawn in view of the rejections found below.

***Drawings***

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the combination of the features in claim 13 and claim 24 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of

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the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35

U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claim 24 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

This claim recites "wherein either the first or second pole

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piece has a planar profile adapted for improving linearity of the output signal delivered by the measuring cells" on lines 2-4. However, it is noted that this claim depends from a claim introducing two pole pieces (see the last three lines of claim 13). Claim 13 appears to be directed towards the embodiments in Figures 7 and 8, while claim 24 appears directed towards the embodiments of Figures 5 and 6. The combination of these embodiments appears to introduce matter. Therefore, this claim stands rejected for new matter.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 13-19 and 22-26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to Claim 13,

The phrase "the first pole piece" on the second to last line lacks antecedent basis.

As to Claims 13 and 26,

The phrase "and which is oriented at least perpendicularly

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to a surface of the pole piece" on lines 8-9 is unclear as it is not clear what is perpendicular to a surface of the pole piece.

As to Claim 22,

The phrase "means for creating the magnetic flux" on the last line is unclear as the difference between this means and the means previously recited on lines 5-6 of claim 13 is unclear.

As to Claim 23,

The phrase "a radially magnetized annular component" on the last line is unclear as the difference between this magnetized annular component and that of the means for creating a magnetic flux on lines 5-6 of claim 13 is unclear.

As to Claims 14-19, 24, and 25,

These claims stand rejected for incorporating the above rejected subject matter of claim 13.

As to Claim 26,

The phrase "wherein the means for creating a magnetic flux comprises a series of four magnets having magnetization directions which are shifted by 90°" on the last three lines is unclear as the relationship between the magnets with regard to the degree shift is unclear. Also, it is not clear what the shift is with respect to.

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The prior art does not disclose or make obvious the invention of claim 26. Therefore, no prior art has been applied to this claim.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 13, 15, 19, 22, 23, and 25 are rejected under 35 U.S.C. 102(e) as being anticipated by Genot et al. (Genot) (6,639,398).

As to Claim 13,

Genot discloses an open magnetic circuit (note Figure 1a) including means for creating a magnetic flux which is mounted and displaceable by the moving object (Figure 1), at least one pole piece (1b) associated with the means for creating a magnetic flux (2), and which is orientated at least perpendicularly to a surface of the pole piece with at least one gap being delimited by the surface of the pole piece and the

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means for creating the magnetic flux (Figure 1), a magnetic leakage flux emerging from the pole piece having a strength which varies at the surface of the pole piece along the axis of displacement (Figure 1), at least one first measuring cell (5) fixedly mounted in the magnetic circuit which is capable of measuring the value of the magnetic flux relative to the axis of displacement, the measuring cell being mounted near an extreme point of displacement to determine thereby magnetic flux delivered by the means for creating a magnetic flux minus the magnetic leakage flux, and means for processing the output signal delivered by the measuring cell in order to determine the linear location of the moving object along the axis of displacement (Column 3, Lines 30-33), wherein the open magnetic circuit includes a second pole piece (1b) positioned facing the first pole piece (1a), and delimiting a gap therebetween ((Figure 1) and (Column 2, Lines 57-66)).

As to Claim 15,

Genot discloses the means for creating a magnetic flux is mounted to be displaceable in translation (Column 2, Lines 51-56).

As to Claim 19,

Genot discloses the means for creating a magnetic flux includes a radially magnetized annular component having an axis



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which is parallel to an axis to an axis of translational displacement ((Figure 1) and (Column 2, Lines 51-56) and (Column 3, Lines 11-13)).

As to Claim 22,

Genot discloses the second pole piece (1b) is provided with means for creating the magnetic flux (Figure 1).

As to Claim 23,

Genot discloses the second pole piece is tubular and includes a radially magnetized annular component ((Figure 1) and (Column 3, Lines 6-14)).

As to Claim 25,

Genot discloses the gap is fixed in distance along the length of travel of the object (Figure 1).

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

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10. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. Claims 13, 14, 15, 22, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oyama et al.

(Oyama) (5,574,365) in view of Berrill (5,793,200).

As to Claim 13,

Oyama discloses an open magnetic circuit including means for creating a magnetic flux which is mounted and displaceable by the moving object (Figure 3), at least one pole piece associated with the means for creating a magnetic flux, and which is orientated at least perpendicularly to a surface of the pole piece with at least one gap being delimited by the surface of the pole piece and the means for creating the magnetic flux, a magnetic leakage flux emerging from the pole piece having a strength which varies at the surface of the pole piece along the axis of displacement, at least one first measuring cell (3) which is capable of measuring the value of the magnetic flux

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relative to the axis of displacement, the measuring cell being mounted near an extreme point of displacement to determine thereby magnetic flux delivered by the means for creating a magnetic flux minus the magnetic leakage flux, and means for processing the output signal delivered by the measuring cell in order to determine the linear location of the moving object along the axis of displacement ((Figures 3 and 4) and (Column 3, Lines 55-58) and (Column 4, Lines 30-67) and (Column 5, Lines 1-23)).

Oyama does not disclose wherein the open magnetic circuit includes a second pole piece positioned facing the first pole piece, and delimiting a gap therebetween.

Berrill discloses the open magnetic circuit includes a second pole piece (note the plurality of pieces (24)) positioned facing the first pole piece, and delimiting a gap therebetween (Figure 1).

It would have been obvious to a person of ordinary skill in the art to modify Oyama to include the open magnetic circuit includes a second pole piece positioned facing the first pole piece, and delimiting a gap therebetween as taught by Berrill in order to provide for linear position sensing along a larger linear distance.

(Note that while Oyama does not explicitly disclose a means

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for processing the output signal delivered by the measuring cell, Oyama must nevertheless include a means for processing the output signal delivered by the measuring cell as claimed in order to produce the information depicted in Figure 4).

As to Claim 14,

Oyama discloses a second measuring cell fixedly mounted in the magnetic circuit so as to measuring the magnetic flux delivered by the means for creating the flux minus the magnetic leakage flux (Figure 3).

As to Claim 15,

Oyama discloses the means for creating a magnetic flux is mounted to be displaceable in translation (Figure 3).

As to Claim 22,

Oyama in view of Berrill discloses the second pole piece is provided with means for creating the magnetic flux (Figure 1 of Berrill).

(Note that the Examiner is broadly interpreting the above phrase to mean that a means for creating a magnetic flux is provided in association with the second pole piece).

As to Claim 25,

Oyama discloses the gap is fixed in distance along the length of travel of the object (Figure 3).

12. Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oyama et al. (Oyama) (5,574,365) in view of Berrill (5,793,200) as applied to claim 14 and in further view of Hinz et al. (Hinz) (2002/0171318).

As to Claim 16,

Oyama in view of Berrill discloses as explained above.

Oyama in view of Berrill does not disclose the processing means for determining the location of the moving object calculates the difference between the output signals delivered by the first and the second measuring cells.

Hinz discloses the processing means for determining the location of the moving object calculates the difference between the output signals delivered by the first (3) and the second (4) measuring cells ((Abstract) and (Page 3, Paragraphs [0038]-[0051])).

It would have been obvious to a person of ordinary skill in the art to modify Oyama in view of Berrill to include the processing means for determining the location of the moving object calculates the difference between the output signals delivered by the first and the second measuring cells as taught by Hinz in order form sum and difference signals that has the great advantage that these signals always exhibit a phase shift

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of 90 degrees relative to one another so these signals can be evaluated in the convention way in order to determine the position and angle (Page 1, Paragraph [0009]).

As to Claim 17,

Oyama in view of Berrill does not disclose the processing means for determining the location of the moving object calculates the difference between the output signals delivered by the first and second measuring cells, divided by the sum of the output signals delivered by the first and second measuring cells.

Hinz discloses the processing means for determining the location of the moving object calculates the difference between the output signals delivered by the first (3) and second (4) measuring cells, divided by the sum of the output signals delivered by the first and second measuring cells ((Abstract) and (Page 3, Paragraphs [0038]-[0051])).

It would have been obvious to a person of ordinary skill in the art to modify Oyama in view of Berrill to include the processing means for determining the location of the moving object calculates the difference between the output signals delivered by the first and second measuring cells, divided by the sum of the output signals delivered by the first and second measuring cells as taught by Hinz in order to form sum and

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difference signals that has the great advantage that these signals always exhibit a phase shift of 90 degrees relative to one another so these signals can be evaluated in the conventional way in order to determine the position and angle (Page 1, Paragraph [0009]).

13. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oyama et al. (Oyama) (5,574,365) in view of Berrill (5,793,200) as applied to claim 14 and in further view of Schroeder (2002/0109501).

Oyama in view of Berrill discloses as explained above.

Oyama in view of Berrill does not disclose the processing means include means for analyzing each output signal in an independent or combined manner in order to determine operating state of each measuring cell.

Schroeder discloses the processing means include means for analyzing each output signal in an independent in order to determine operating state of each measuring cell (Figure 5) and (Page 2, Paragraphs [0013]-[0015] and [0022])).

It would have been obvious to a person of ordinary skill in the art to modify Oyama in view of Berrill to include the processing means include means for analyzing each output signal in an independent or combined manner in order to determine

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operating state of each measuring cell as taught by Schroeder in order to provide advantageously a malfunction detector for MR position sensors (Page 2, Paragraph [0015]).

14. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oyama et al. (Oyama) (5,574,365) in view of Berrill (5,793,200) as applied to claim 13 and in further view of Schroeder et al. (2003/0034775).

Oyama discloses the means for creating a magnetic flux includes a magnetized annular component having an axis which is parallel to an axis of translational displacement (Figure 3).

Oyama in view of Berrill does not disclose that the means for creating a magnetic flux includes a radially magnetized annular component.

Schroeder et al. discloses the means for creating a magnetic flux includes a radially magnetized annular component (Figure 4).

It would have been obvious to a person of ordinary skill in the art to modify Oyama in view of Berrill to include the means for creating a magnetic flux includes a radially magnetized annular component as taught by Schroeder et al. in order to utilize a readily available component to produce a magnetic field.



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15. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Genot et al. (Genot) (6,639,398) in view of Luetzow (6,798,195).

Genot does not disclose either the first or second pole piece has a planar profile adapted for improving linearity of the output signal delivered by the measuring cells.

Luetzow discloses utilizing shaped pole pieces for improved output linearity (Column 1, Lines 20-25).

It would have been obvious to a person of ordinary skill in the art to modify Genot to include the first or second pole piece has a planar profile adapted for improving linearity of the output signal delivered by the measuring cells given the above disclosure and teaching of Luetzow in order to allow for more of the sensor output to be usable as the means for creating the magnetic flux moves along its path and to reduce signal noise.

#### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David M. Schindler whose telephone number is (571) 272-2112. The

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examiner can normally be reached on Monday-Friday (8:00AM-5:00PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Assouad can be reached on (571) 272-2210. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

David M. Schindler  
Examiner  
Art Unit 2862

DMS

  
**REENA AURORA**  
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